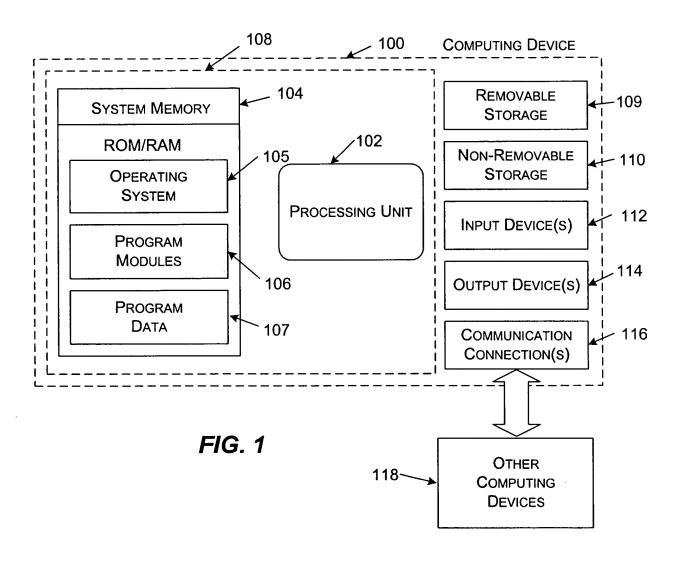Inventor: Trishul M. Chilimbi
Docket No.: 50037.60US01
Title: SYSTEM AND METHOD FOR USING DATA ADDRESS SEQUENCES OF A
PROGRAM IN A SOFTWARE DEVELOPMENT TOOL
Attorney Name: John S. Jardine
Phone No.: 206.342.6253
Sheet 1 of 9

1/9

FIG. 1

Inventor. Trisau. M. Carumsi
Docket No.: 50037.60US01
Title: SYSTEM AND METHOD FOR USING DATA ADDRESS SEQUENCES OF A
PROGRAM IN A SOFTWARE DEVELOPMENT TOOL
Attorney Name: John S. Jardine
Phone No.: 206.342.6253
Sheet 2 of 9

2/9

FIG. 2

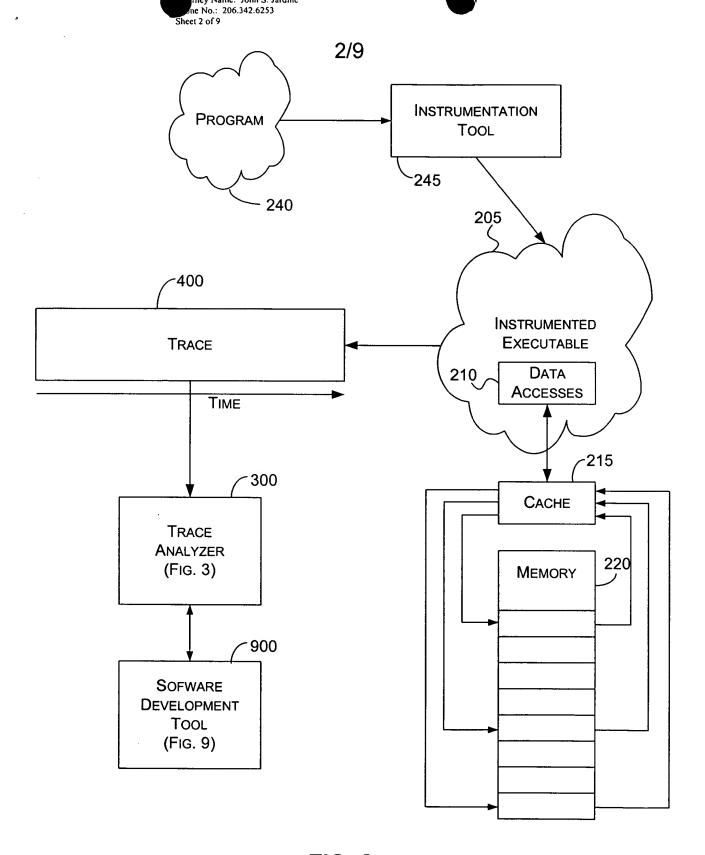*FIG. 3*

v......or .ns.u. .M. Chilimbi
Docket No.: 50037.60US01
Title: SYSTEM AND METHOD FOR USING DATA ADDRESS SEC... ...CES OF A
PROGRAM IN A SOFTWARE DEVELOPMENT TOOL
torney Name: John S. Jardine
one No.: 206.342.6253
Sheet 4 of 9

4/9

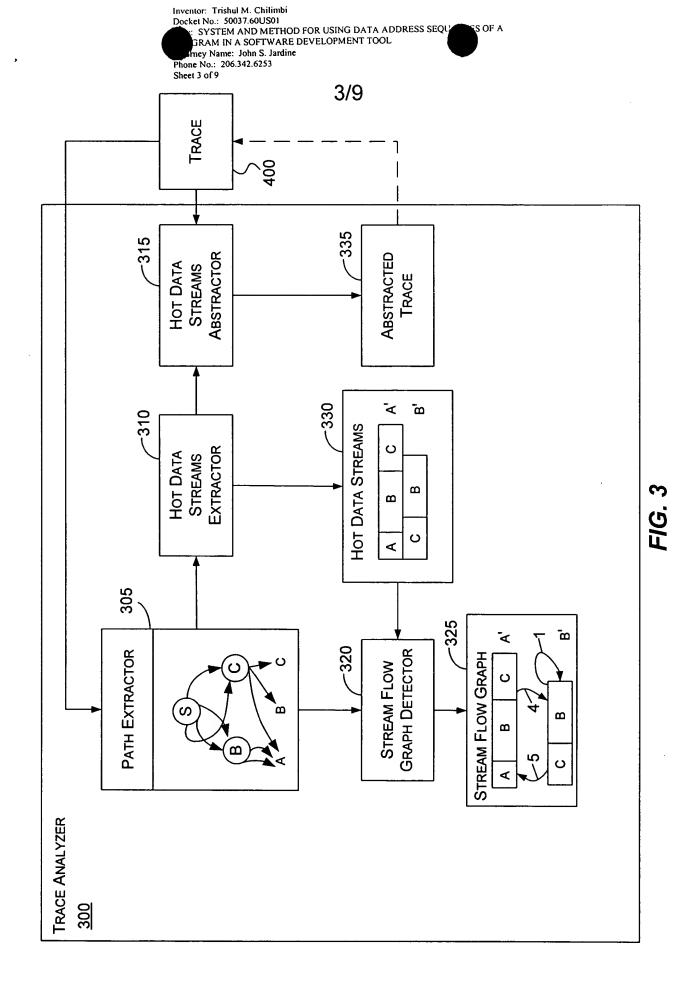
FIG. 4

Inventor: Insu. M.. Chaimsi
Docket No.: 50037.60US01
Title: SYSTEM AND METHOD FOR USING DATA ADDRESS SEQUENCES OF A
PROGRAM IN A SOFTWARE DEVELOPMENT TOOL
Attorney Name: John S. Jardine
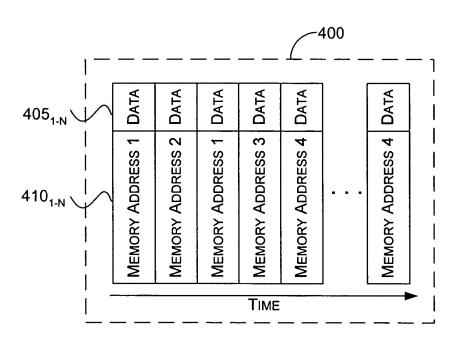Phone No.: 206.342.6253
Sheet 5 of 9

5/9

```
                    ┌─────────────┐
                    │    START    │� 505
                    └──────┬──────┘
                           │
                           ▼
              ┌────────────────────────┐
              │  INSTRUMENT EXECUTABLE  │� 510
              └───────────┬────────────┘
                          │
                          ▼
              ┌────────────────────────┐
              │  EXECUTE INSTRUMENTED   │
              │       EXECUTABLE        │� 515
              └───────────┬────────────┘
                          │
                          ▼
              ┌────────────────────────┐
              │  TRANSFORM TRACE DATA   │
              │        (FIG. 6)         │� 520
              └───────────┬────────────┘
                          │
                          ▼
              ┌────────────────────────┐
              │     ANALYZE TRACE       │
              │        (FIG. 9)         │� 525
              └───────────┬────────────┘
                          │
                          ▼
                   ┌─────────────┐
                   │     END     │� 530
                   └─────────────┘
```
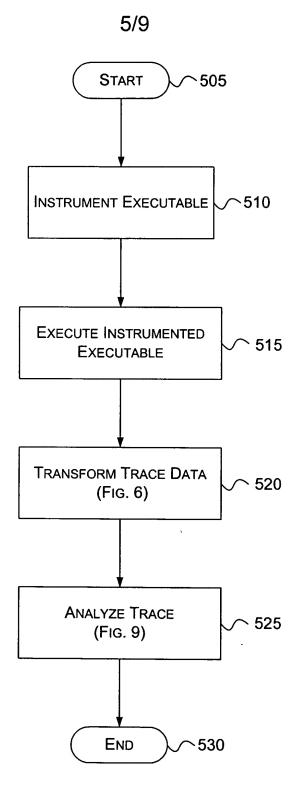
FIG. 5

Inventor: Trishul M. Chilimbi
Docket No.: 50037.60US01
Title: SYSTEM AND METHOD FOR USING DATA ADDRESS SEQUENCES OF A
PROGRAM IN A SOFTWARE DEVELOPMENT TOOL
Attorney Name: John S. Jardine
Phone No.: 206.342.6253
Sheet 6 of 9

6/9

```
                    ┌──────────┐
                    │  BEGIN   │───~605
                    └──────────┘
                         │
                         ▼
                      ╱─610─╲
                     ╱  LAST  ╲          Y     ┌──────────┐
                    ╱ RECORD IN╲──────────────▶│  RETURN  │───~615
                    ╲  TRACE   ╱              └──────────┘
                     ╲ FILE?  ╱
                      ╲──────╱
                         │ N
                         ▼
                   ┌─────────────┐
                   │ READ NEXT   │
                   │ RECORD IN   │───~620
                   │ TRACE FILE  │
                   └─────────────┘
                         │
                         ▼
                      ╱─625─╲
              Y      ╱ STACK  ╲
        ◀───────────╲REFERENCE?╱
                     ╲────────╱
                         │ No
                         ▼
                      ╱─630─╲
                     ╱  HEAP  ╲         N
                     ╲REFERENCE?╱──────────────┐
                      ╲────────╱               │
                         │ Y    ~635           │
                         ▼                      │
          ┌──────────────────────────────┐     │
          │ MAP REFERENCE TO UNIQUE      │     │
          │ INDENTIFIER INDENTIFYING     │     │
          │ MEMORY ALLOCATION THAT WOULD │     │
          │ CONTAIN MEMORY ADDRESS       │     │
          └──────────────────────────────┘     │
                         │                      │
                         ▼                      │
                   ┌─────────────┐              │
                   │  WRITE TO   │◀─────────────┘
                   │ TRANSFORMED │───~640
                   │ TRACE FILE  │
                   └─────────────┘
```

FIG. 6

Inventor: Trishul M. Chilimbi
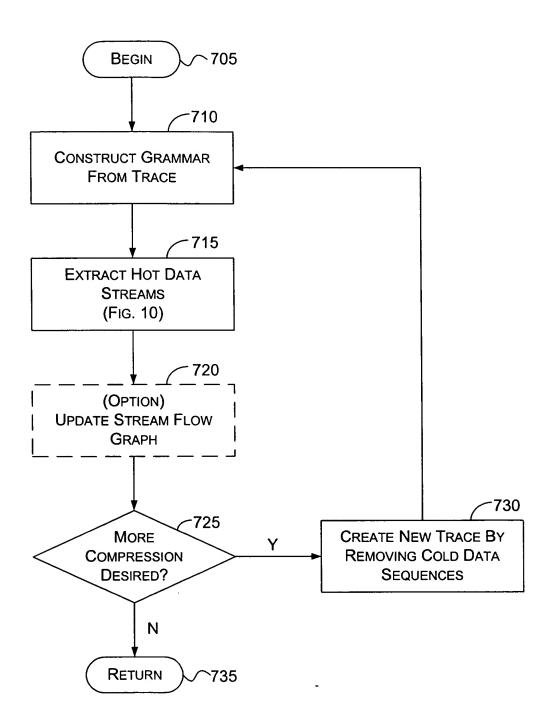Docket No.: 50037.60US01
: SYSTEM AND METHOD FOR USING DATA ADDRESS SEQ   OF A
RAM IN A SOFTWARE DEVELOPMENT TOOL
ney Name: John S. Jardine
ne No.: 206.342.6253
Sheet 7 of 9

BEGIN ⟩⟍705

┌─────────────────┐ ⟋710
│ CONSTRUCT GRAMMAR │
│   FROM TRACE   │
└─────────────────┘

┌─────────────────┐ ⟋715
│ EXTRACT HOT DATA │
│   STREAMS   │
│   (FIG. 10)   │
└─────────────────┘

┌─ ─ ─ ─ ─ ─ ─ ─ ┐ ⟋720
│   (OPTION)   │
│ UPDATE STREAM FLOW │
│   GRAPH   │
└─ ─ ─ ─ ─ ─ ─ ─ ┘

⟋725
MORE
COMPRESSION
DESIRED?

Y → ┌─────────────────┐ ⟋730
     │ CREATE NEW TRACE BY │
     │ REMOVING COLD DATA │
     │   SEQUENCES   │
     └─────────────────┘

N

RETURN ⟩⟍735

FIG. 7

Inventor: Trishul M. Chilimbi
Docket No.: 50037.60US01
SYSTEM AND METHOD FOR USING DATA ADDRESS SEQU▮▮▮▮ OF A
RAM IN A SOFTWARE DEVELOPMENT TOOL
ney Name: John S. Jardine
Phone No.: 206.342.6253
Sheet 8 of 9

8/9

BEGIN — 805

CONSTRUCT A SEQUENCE
OF CONSECUTIVE DATA
ACCESSES FROM WPS — 810

ANY
SEQUENCES
LEFT? — 815

N → RETURN — 820

Y

DETERMINE IF COST OF
ACCESSING DATA IN
SEQUENCE IS GREATER
THAN THRESHOLD — 825

GREATER THAN
THRESHHOLD? — 830

N

Y

MARK SEQUENCE AS
HDS — 835

FIG. 8

FIG. 9